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symmetric decision regions, each representing one quadrant, identified with the reference numerals 20, 21, 22 and 26. Similarly, for an 8PSK constellation as illustrated in FIG. 3, there are 8 decision regions 30, 32, 34, 36, 38, 40, 42 and 44. Each decision region 30-44 is defined by a rotationally symmetric 45° slice of a pie as shown by the dotted lines in FIG. 3. In order to decode the symbols, the bit or symbol decisions are based upon determining the decision region in which the decision variable is located. This technique is known as hard-decision detection.

IN THE CLAIMS

Please amend claims 1, 3, 5, 11 and 15.

1. (Amended) A demodulator comprising:

means for receiving modulated signals defining received signals;

a storage device for storing initial decision boundaries for use in demodulating said modulated signals;

means for determining the distance between said received signals relative to said initial decision boundaries;

means for adjusting said initial boundaries as a function of said distance, defining adjusted decision boundaries; and

means for decoding said modulated signals relative to said adjusted decision boundaries.

3. (Amended) The demodulator as recited in claim 1, further including a system for transmitting and decoding a predetermined training sequence defining decoded reference signals and a symbol error counter for comparing said decoded reference signals to a predetermined training sequence to further improve the bit error rate.

5. (Amended) A demodulator comprising:

means for receiving modulated signals defining received signals;

a storage device for storing a reference constellation;

means for determining the distance between said received signals and said reference constellation;

means for adjusting the location of said reference constellation as a function of said distance defining an adjusted reference constellation and storing said adjusted reference constellation; and

means for decoding said received signals relative to said adjusted reference constellation.

11. (Amended) A method for demodulating a signal comprising the steps of:

(a) receiving modulated signals defining received signals;

(b) storing a predetermined decision boundary for demodulating said received signals;

(c) determining the distance of said received signals relative to said predetermined decision boundaries;

(d) adjusting said predetermined boundaries as a function of said distance defining adjusted decision boundaries;

(e) storing said adjusted decision boundaries; and

(f) decoding said received signals relative to said adjusted decision boundaries.

13. (Amended) A method for demodulating a signal as recited in claim 11, further including the steps of: transmitting and decoding a predetermined training sequence defining decoded reference signals and providing a symbol error counter for comparing said decoded reference signals to said predetermined training sequence to further improve the bit error rate.

15. (Amended) A method for demodulating a signal comprising the steps of:

(a) receiving modulated signals defining received signals;

(b) storing a reference constellation;

(c) determining the distance between said received signals and a reference constellation;

(d) adjusting the location of said reference constellation as a function of said distance defining an adjusted reference constellation;

(e) storing said adjusted reference constellation; and

(f) decoding said signals relative to said adjusted reference constellation.